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|-------------------------------|---------------------------|---------------------|--|
| <b>Notice of Allowability</b> | <b>Application No.</b>    | <b>Applicant(s)</b> |  |
|                               | 09/301,961                | PEIRCE ET AL.       |  |
|                               | Examiner<br>Herng-der Day | Art Unit<br>2128    |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to Amendment received 9/13/04 and 11/10/04.
2.  The allowed claim(s) is/are 6-10.
3.  The drawings filed on 11/10/04 are accepted by the Examiner.
4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some\*    c)  None    of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
    - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_.
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

JEANNE W. OMERE  
PRIMARY EXAMINER

**DETAILED ACTION**

1. This communication is in response to Applicants' Amendment and Response to Office Action dated May 4, 2004, mailed September 7, 2004, received by PTO September 13, 2004, and Applicants' Supplemental Amendment and Response faxed November 10, 2004.

1-1. Claims 6-10 have been amended. Claims 1-4 and 12-19 have been cancelled. Claims 6-10 are pending.

1-2. Claims 6-10 have been examined and allowed.

*Interview Summary*

2. While reviewing Applicants' Amendment and Response received September 13, 2004, the Examiner located potential indefiniteness problems under 35 U.S.C. 112, second paragraph, with claims 6-10.

On November 9, 2004, the Examiner telephoned Mr. Thomas O. Mitchell (Reg. No.: 47,800) to discuss these problems. In response to the telephone conversation, Applicants submitted Supplemental Amendment and Response on November 10, 2004, amended claims 6-10 and cancelled claims 1-4 and 12-19.

*Reasons for Allowance*

3. The following is an Examiner's statement of reasons for allowance:

3-1. The closest prior art of record discloses:

- (1) A grid oriented hydraulic fracture simulator (Stim-Lab, Inc. and Marathon Oil Company, "GOHFER Grid Oriented Hydraulic Fracture Extension Replicator").
- (2) A method to solve problems for elastic multi-layered media with cracks and cavities (Linkov et al., "An Effective Method for Multi-Layered Media with Cracks and Cavities").

**3-2.** Independent claim 6 is directed at a device of designing a hydraulic fracture of a well. This independent device claim identifies the distinct combination of features of step (a), step (c), and step (d) as shown in Figures 5 and 6. This distinct combination of features has not been uncovered in a single teaching, nor would a modification of prior art references be obvious to one of ordinary skill in the art to yield these limitations in the context of the claim. Claim 6 is deemed allowable.

**3-3.** Independent claim 7 is directed at a method of designing a hydraulic fracture of a well. This independent claim identifies the distinct combination of features of step (a), step (c), and step (d) as shown in Figures 5 and 6. This distinct combination of features has not been uncovered in a single teaching, nor would a modification of prior art references be obvious to one of ordinary skill in the art to yield these limitations in the context of the claim. Claim 7 is deemed allowable.

**3-4.** Independent claim 8 is directed at a method for monitoring or evaluating the fracture of a well. This independent claim identifies the distinct combination of features of step (a), step (b), step (d), and step (e) as shown in Figures 5 and 6. This distinct combination of features has not been uncovered in a single teaching, nor would a modification of prior art references be obvious to one of ordinary skill in the art to yield these limitations in the context of the claim. Claim 8 is deemed allowable.

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3-5. Independent claim 9 is directed at a method of evaluating the fracture of a well following a fracturing operation. This independent claim identifies the distinct combination of features of step (a), step (b), step (d), and step (e) as shown in Figures 5 and 6. This distinct combination of features has not been uncovered in a single teaching, nor would a modification of prior art references be obvious to one of ordinary skill in the art to yield these limitations in the context of the claim. Claim 9 is deemed allowable.

3-6. Independent claim 10 is directed at an article of manufacture to estimate fracturing fluid performance. This independent claim identifies the distinct combination of features of step (c), step (d), and step (e) as shown in Figures 5 and 6. This distinct combination of features has not been uncovered in a single teaching, nor would a modification of prior art references be obvious to one of ordinary skill in the art to yield these limitations in the context of the claim. Claim 10 is deemed allowable.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (571) 272-3777. The Examiner can normally be reached on 9:00 - 17:30.

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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Jean Homere can be reached on (571) 272-3780. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Heng-der Day *J.D.*  
November 10, 2004

JEAN R. HOMERE  
PRIMARY EXAMINER